Department of Computer Science

Informal Seminar/ Reading Group on Software Verification and Distributed Systems

The Theory of Counterfactuals and its Applications to Change-Impact Analysis of Programs

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Abstract

In a nutshell, the theory of counterfactuals lets us decide on assertions that are not based on matters of fact. It is one of the many logics based on the model of many-possible world's semantics. In his book about this topic David Lewis describes (in an intuitive manner, at first) a tentative model in which assertions known as counterfactual conditionals could be interpreted and unambiguously decided on. In this talk, we will try to expose in a formal manner the essence of Lewis' theory. And suggest ways in which it could be applied to formal code verification. For example, counterfactual logic is an extension of modal logic, which is widely used in the field of model checking, hence, it may be possible to apply counterfactual logic in order to develop formalisms which let us verify a- priori assertions (future assertions) about modifications/optimizations to a given program.

All are invited.